LOUISIANA Conservationist

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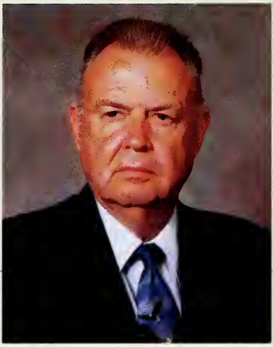

Joe L. Herring, Secretary

Comments

The loss of our coastal wetlands has, in recent years, become a "high priority concern" for millions of Americans, both here in Louisiana and throughout the nation. Although coastal erosion is an intrinsic part of one of nature's most awesome cycles, the cycle has been interrupted and land loss accelerated greatly by man's alteration of his environment. Only within recent decades have we begun to realize the magnitude of our error. Only within recent years has our government begun to realize the true national impact of the loss of Louisiana's fabled coastal marshes.

But the loss of our coastal wetlands, with its portent for ecological, economical and social disaster reaching far beyond the borders of Louisiana, is no new issue for the Department of Wildlife and Fisheries. Our employees have long been developing water management techniques and erosion control devices in an effort to preserve what we could of Louisiana's coastal marsh. By necessity, our experiments and efforts were relatively small in scope and we were compelled to watch helplessly as acre upon acre and mile upon mile of priceless estuarine marsh disappeared beneath the surface to be washed into the open Gulf of Mexico.

More than a decade ago, the Louisiana Legislature initiated attempts to slow the rate of coastal erosion by mandating the preparation of a plan for diversion of fresh water into coastal marshes. In 1989, a small portion of the state's oil and gas severance taxes was dedicated to coastal restoration efforts.

In 1990, then-U.S. Representative John Breaux and U.S. Senator J. Bennett Johnston spearheaded legislation to earmark some $35 million per year in federal funding for Louisiana's coastal restoration effort.

Now we stand at a true turning point. We know what the problems are and the efficiency of diverse corrective management practices has been demonstrated. We also know that meaningful correction will not result from small scale action, nor will a few million dollars begin to support what must be done.

In this issue of the *Louisiana Conservationist* we begin a year-long series on "Louisiana's Vanishing Coast." The series will present the problem, the possible short and long term corrective actions necessary to combat the continuing land loss, and the immediate and long term consequences to the state and the nation if we fail to act quickly and decisively.

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LOUISIANA Conservationist

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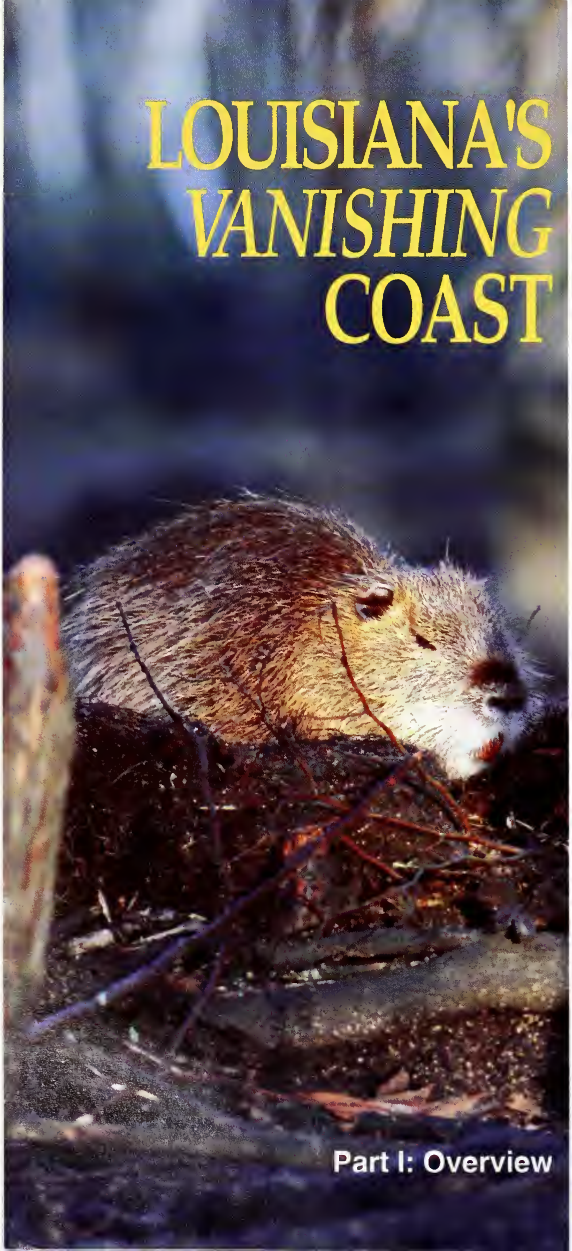
LOUISIANA'S *VANISHING* COAST



LDWF file photo

Part I: Overview

BY PHILIP BOWMAN, DR. LEN BAHR & PAUL COREIL

Louisiana is blessed with a great wealth of natural resources, including a coastal zone richer and more diverse than any other in the nation. This coastal zone, 4,000 square miles of marshes, swamps, shallow estuaries and levee ridges, is the geological product of land created slowly over 7,000 years by the Mississippi River. To quote Stan Green with the New Orleans District, U.S. Army Corps of Engineers:

"The nation's mightiest river, the Mississippi, shoulders its way between broad levees as it courses through [Louisiana] for the last several hundred miles of its journey to the Gulf of Mexico. The river carries not only the commerce of a large part of the United States, but also freshwater for industrial and domestic use, and tons of sediment, swept from the top soil of 40 percent of the country, sediment which built the rich farmland of the delta country and the fertile wetlands of the coast. In addition, the state is laced with innumerable miles of smaller waterways, with spritely rivers such as the Bogue Falaya, spilling from the uplands to the coastal plain, and sleepy bayous like the Teche, wandering among the moss-draped oaks of Acadiana, a lonesome relic of a time when the powerful Mississippi forged a course far to the west of its present location. It is the land of the great swamp called the Atchafalaya, a place where dark majestic beauty reminds us that the primeval wilderness is not yet gone forever. And to the south, in a land of lush grasses and meandering tidal creeks and shallow ponds brimming with life, lies the place where the distinction between earth and water is blurred, where the warmth of a nearly tropical sun and a seemingly endless supply of nutrients make possible an incredible richness of life, the coastal marshes. This is the precious resource that is disappearing before our eyes, from beneath our very feet."

At no other time in history have wetlands in general and coastal wetlands in particular received more attention and interest from Louisiana citizens. This interest has come about as a result of a painful lesson for our state and our nation. Whereas we once believed that wetlands were wastelands to be drained and converted to some "higher" use, we now know that wetlands provide us with numerous benefits that are extremely critical to our well-being. Unfortunately, we didn't learn the lesson until roughly half of our original wetlands were gone.

During the past 30 years, wetlands have been recognized as having functional values greater than that of almost any other type of ecosystem, even agricultural fields. The functions that wetlands play in providing our state's vast diversity and volume of wildlife and fisheries resources cannot be overstated. Recognized wetland values are providing vital public support for conservation and restoration-oriented federal and state wetland policies.

More than 95 percent of the commercial fish landed in the Gulf of Mexico depend heavily on coastal wetland-estuarine habitats. Coastal wetlands provide critical nursery habitat for commercially-important marine species such as shrimp, blue crabs, oysters, menhaden and numerous other marine species. One example is the life cycle of the shrimp, in which adults spawn offshore and the larval shrimp migrate into the estuary for proper water chemistry, protection and food. Commercially-harvested fisheries resources are a vital part of the Louisiana economy, contributing more than $327 million (dockside value) per year to the economy and providing thousands of fishing and processing-related jobs.

Recreational fishing is also vitally dependent upon Louisiana's coastal wetlands. Popular saltwater recreational species associated with Louisiana's vast marsh ecosystems include redfish, speckled trout, flounder, croaker and black drum. In 1992, more than 260,000 saltwater fishing licenses were sold in Louisiana. Total saltwater recreational fishing expenditures amounted to an estimated $245 million.

More than 40 percent of the nation's wild fur harvest come from Louisiana's wetlands. Economically important furbearers include nutria, muskrat, mink, raccoon, otter, coyote and opossum. The harvest of fur resources not only produces income for Louisiana's coastal residents, but also helps to reduce the amount of wetlands loss caused by nutria and muskrat overpopulation.

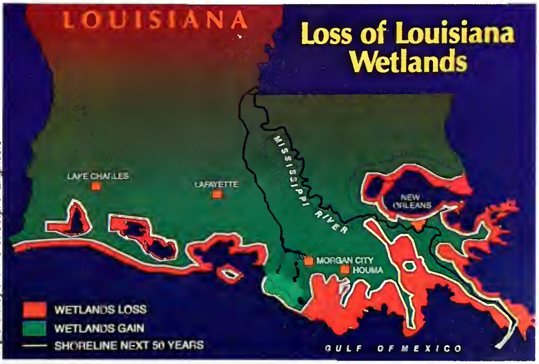
Both wild and farm-raised alligator harvests are vitally linked to Louisiana's wetlands regions. More than 25,000 wild alligators are harvested each year in Louisiana for hides and meat. Additionally, thousands of farm-raised alligators are produced through a well-managed "ranching" program, where eggs are taken from the wild, allowed to hatch, and then "grown" out in controlled chambers on an alligator farm. The value of hides and meat from both wild and farm harvests exceeded $16 million in 1992.

Louisiana's vast coastal wetlands also provide extremely important wintering habitat for many species of ducks and geese. In 1991, more than 330,000 hunting licenses were sold in Louisiana, representing total expenditures exceeding $430 million. Waterfowl hunting continues to make a significant contribution to the Louisiana economy.

Tourism associated with Louisiana's wetland-related ecological attractions continues to offer one of the best potential options for coastal communities seeking sustainable economic development. Activities normally associated with eco-tourism include nature photography, bird watching, nature painting, boating, waterskiing, swimming and camping.

The rich resources so plentiful along Louisiana's coastal zone have allowed residents from varied nationalities and unique customs to forge a close association with the land and water. A strong dependence on wetlands for food and livelihood has led to the evolution of a coastal culture that is uniquely "Louisiana!" With a strong wetland conservation commitment, Louisiana citizens will continue to enjoy the rich fisheries and wildlife diversity that many of us too often take for granted. Much work, however, lies ahead and must not be postponed.

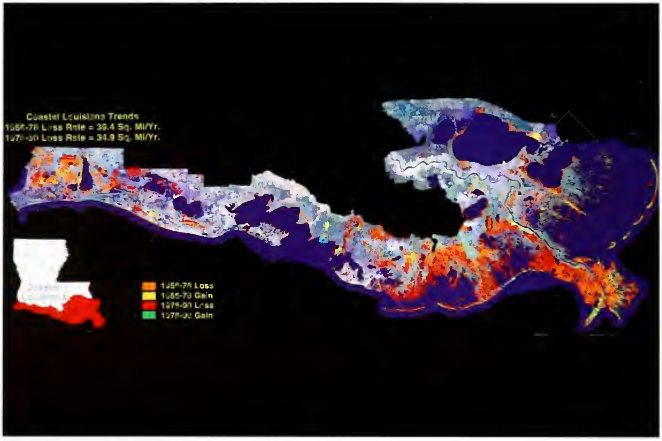
Louisiana is losing her coastal land (both wetlands and fastlands) at a catastrophic rate.



According to the U.S. Corp. of Engineers, in fifty years Louisiana's coastline could border Houma.

Map courtesy of the U.S. Corp. of Engineers

The estimated rate of coastal land loss is 25 square miles a year, a losing battle that has generated cries of help from all Louisiana citizens. The loss of our wetlands effects the birdwatchers as well as the fishermen.



Map courtesy of National Wetlands Research Center (Lafayette, La.)

LDWF file photo

One of the most dramatic illustrations of how rapidly this loss is taking place is shown on the map on page 5, which indicates how far north the coastline of Louisiana will be in just 50 years unless dramatic action is taken very soon.

This projection of our coastline assumes that the combined effects of land sinking (subsidence) and sea level rise will continue to proceed at about 1 inch every two years, as they have during recent times. Thus, in 50 years, unless we intervene in some major way, average sea level at the present Gulf coast will be at least 2 feet higher than it is today. A trip to Cocodrie or Golden Meadow will prove that we simply don't have 2 feet of freeboard to spare.

The U.S. Army Corps of Engineers estimates that the present rate of coastal land loss is 25 square miles a year. The U.S. Fish and Wildlife Service places that figure even higher at about 34 percent. The latter number is based on measuring the loss in coastal land area between 1978 and 1990, as shown in the above map.

The red areas, which were land (mostly wetland) until 1978, are now covered with shallow water. The loss of land has obviously been much more rapid in some areas than in others. Note that the lower Terrebonne and Barataria basins, between the Atchafalaya and

Mississippi Rivers, are particularly prone to "hot spots," or areas of rapid erosion.

It is sufficient to say that the coastal zone of Louisiana suffers from an enormous annual sediment deficit resulting from the interruption by human beings of the geological delta-building process. In other words, more sediment brought to Louisiana by the Mississippi River washes out to sea or sinks in place each year than the amount that accumulates to build land. We have so altered the "plumbing" of the lower Mississippi River that it can no longer continue to build delta lobes like it did before we intervened.

These alterations were carried out during the last century to prevent flooding of people and property, to extract minerals from coastal wetlands and to provide navigation channels for commerce and industry. The changes were made before the enormous value of coastal lands and especially coastal wetlands were widely understood. Coastal swamps and marshes were dredged, drained and impounded while the Mississippi River was leveed and prevented from flooding over its banks during spring high water periods.

The overall problem of coastal land loss was described above as an annual mineral sediment deficit. Thus, one long term solution to Louisiana's coastal problem will be to somehow reverse the sediment deficit. This reversal will involve speeding up the geologic delta building process and keeping more of the sediments in the coastal zone (out of deep water offshore). This can be accomplished by managing the coastal sediment budget on a massive scale, using natural and artificial means. For example, we can mimic the natural delta building process by diverting much of the Mississippi River water (and sediments) into shallow zones.

As a result of the growing public concern about the consequences of coastal land loss, a Louisiana constitutional amendment was passed in 1989 that dedicated as much as $25 million a year of state oil and gas severance taxes for a coastal restoration effort. In addition, a state law was passed creating: (1) a coastal wetlands trust fund; (2) a coastal restoration task force of six agencies, chaired by a representative of the governor; and (3) an office of coastal restoration and management within the Department of Natural Resources.

Federal funding of about $35 million a year to address Louisiana's catastrophic coastal erosion problem became available in 1990. This money, and a federal/state task force to oversee its use, was authorized under the "Coastal Wetlands Planning, Protection and Restoration Act, 1990," which is usually referred to as the Breaux-Johnston Act. The federal law stipulates that the CWPPRA money be used to build short-term coastal wetland restoration projects and to create a long-term restoration plan.

The overall solution won't be simple and it won't be cheap. Some authorities estimate that reversing the loss of land will cost as much as $9 billion dollars over the next 50 years. On the other hand, not solving the problem will result in the loss to the state and the nation of at least $100 billion worth of natural resources, property, infrastructure and income-generating capacity.

In the upcoming issues we will explore in greater detail the wealth of Louisiana's coastal resources, the reasons for wetlands loss, what can be done and what is currently being done to save our coast. ■

LDWF file photo

ASSIGNMENT CANADA

STORY & PHOTOGRAPHY BY SCOTT DURHAM

The first complete record of banding and recovery of waterfowl on the North American continent occurred in 1909. Today it is a vital part of waterfowl management that allows wildlife personnel to monitor and study migratory bird populations, which in turn gives necessary information for determining hunting season lengths.

Jack Minor of Kingsville, Ontario, had a love of waterfowl. Each year he welcomed and looked forward to the arrival of ducks and geese that visited his bird sanctuary to rest and feed. He wondered if some of them were the same ones that came in previous years and where the birds actually went as the age old migrations north and south took place. He began placing a light metal band on the legs of some that he caught. Each band had a short biblical scripture inscribed on it — a message to subsistence-hunting Indians that might take the bird. The Indians would show the band to their local priest who knew of Minor and who would write him of the bird that was brought to him.

In 1909, Minor banded a mallard that was shot the following year in the United States. This was the first complete record of a banding and recovery on the North American continent.

Today, banding is still a very important waterfowl management technique that wildlife personnel use to monitor and study migratory bird populations. Distribution of harvest, reproductive success, population parameters, migration, and annual and long-term survival rates are at least partially determined by banding and band recovery data. These factors are important in determining hunting season lengths, season start and end dates, shooting hours and duck bag limits. The U.S. Fish & Wildlife Service has primary authority and responsibility for assimilating this data and providing the framework in which states work.

In August of each year, a major effort by federal, state and provincial wildlife agencies takes place to band significant numbers of waterfowl in the Canadian pothole country nesting area. This program has been in existence for more than 30 years. During the past 15 years, approximately 30,000 to 35,000 ducks per year have been banded from 10 to 15 banding stations across Saskatchewan, Alberta, Ontario and Manitoba. Targeted species include mallards, blue-winged teal and pintails.

The banding station at Yorkton, Saskatchewan, has been "adopted" by the Mississippi Flyway Technical Committee. Cooperating states commit financial and personnel resources to man this station. In 1993, Louisiana took its turn and Illinois and Arkansas repeated. I was lucky enough to receive the assignment. I met with Nick Smith in Monticello, Arkansas, and we drove for three days. We would meet Vic Hamer, a 20-year veteran waterfowl biologist from Illinois, in Canada. Vic would be making his seventh Canadian trip this year and would be our crew chief.

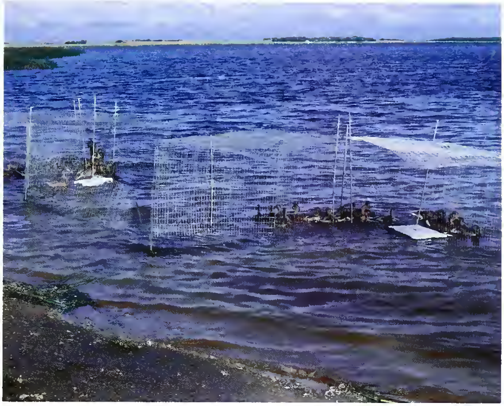
The area of Saskatchewan we would be working in is described as Aspen park land. It is a transition zone between the prairies to the south and the Boreal forests to the north. This is agricultural country. Quaint red barns and neatly-laid-out farmsteads stretch out over vast fields of barley, canola, alfalfa, wheat, oats, flax and sunflower. As far as the eye can see sometimes, the fields lay with shelter-belts of cold resistant trees and hand-planted shrubs to break the winds. In some places remnant scrub forest areas break the endless sea of green turning to amber and give cover to monster whitetails and other wildlife species. Here and there are small potholes, bigger marshes and lakes. Many of the more choice and productive-looking sites are managed by Ducks Unlimited as evidenced by the large signs displaying the famous duck head emblem. Managed nesting habitats in close proximity to brood rearing wetlands were also marked by a sign with the cooperating farmer's name or by the title "Prairie Care" which is a cooperative venture of Ducks Unlimited Canada, Saskatchewan Wetland Conservation Corporation and the North American Waterfowl Management Plan.

After arriving at our camp at Spiritwood Lake and getting settled in, we went to the DU storage facility in Yorkton to inspect traps and gear. We visited all of our possible bait sites to check water levels and access. We prebaited sites that looked promising with barley to begin drawing birds to the desired locations.

Our next order of business was a brief orientation meeting with the other banding crews. We also picked up our assigned bands and extra wire to build more traps if necessary. Doug Benning of the USFW Service was the coordinator of this year's banding season and our chances for success were discussed. It did not sound promising because the abundant precipitation had come too late. A dry spring preceded by a winter with little snowfall (a very important factor in wetland recharging) had resulted in poor production of young birds. We had all heard it before. When conditions are dry enough, entire potholes are destroyed with single passes by monster tractors and farm implements. Reduced cover vegetation and nesting habitat result in astronomical fox, coon and skunk predation on nesting hens and eggs.

We would trap hard and do our best anyway. If it weren't for DU, some cooperating farmers and government wildlife agencies, would there be any waterfowl nesting and brood rearing habitat left at all?

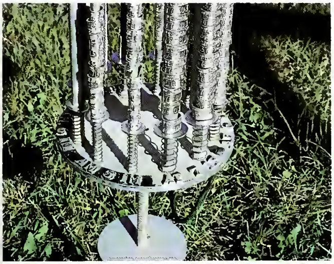
With the same anticipation duck hunters have before a new season, we were anxious to start putting bands on birds.



Daily visits to the trap sites involved removing the birds and recording the age and sex as well as placing a metal band on each one.

The first week was consumed getting all the traps to the bait sites and setting them up. We also built a few extra to be ready if good numbers of birds started showing up. We kept plenty of bait out and began catching a few birds. Doug Benning flew to Yorkton in the 185 Cessna and we scouted for extra sites from the air. We found two holding large numbers of ducks. The new locations were marked on a map to be checked out on the ground for access, water levels and bottom conditions.

One of the sites proved to be trapable although a fairly tough haul over some soft marsh would be necessary. The bottom wasn't good and it would be hard to bait and work but there were lots of ducks there. We decided it was certainly worth a try and put one of our new traps there. It caught good numbers of blue wings a little later on.



By the end of the month, 2948 ducks had been banded.

The traps we used were made of 1-inch-by-2-inch welded wire and were designed with a funnel entrance that the birds would swim into and would not be able to escape. They were simple, effective and easy to transport and set up.

Our daily round would eventually encompass a 150-mile drive, visiting five sites with 20 traps.

On arriving at a trap site, we scooped the birds out of the trap with a dip net and put them in a smaller holding box from which we pulled them out one or two at a time. The birds were aged and sexed. An aluminum band with a number and the USFW Service address was placed on a leg of each bird and the duck was released. Many of them seemed to decide it was easier to feed on the barley we baited our traps with rather than to forage for themselves. We would catch them over and over again. One old Canvasback hen wore a band so old and worn, the numbers were barely legible. We caught her almost every day for a whole month!

The weather had a definite affect on our catch. We did better on cooler days following a front. It seemed that birds would stage up and feed a little more during these conditions.

As the month went by our average daily catch began to peak at about the start of the third week. Our best day was 242 ducks.

Our month-long banding effort resulted in 2,948 ducks banded. Of that total, the great majority were mallards and blue winged teal. Thirteen other species were banded as well including beautiful pintails, gadwalls, black ducks, widgeons, redheads and canvasbacks. We also caught about 50 retraps, or birds banded in previous years. This would result in valuable added data.

Getting to put one's hands on all of those works of nature was a thrilling and very satisfying experience for a wildlife professional.

The north country that I was visiting would begin freezing up at the end of September. It was with a feeling of awe and wonderment that I thought of the great journey the very birds I had banded would be taking so soon. Would a Louisiana hunter and his family say blessing over a meal that included one of our birds? Would someone recognize the faint whistling sound of a flock of Widgeons and look up and see them crossing the sky before a cold front? Would he or she imagine the steady whirring buzz of their wings — on and on like a constant through time? I hoped so.

As I traveled south on my way home, the devastation of one of the worst floods ever recorded was still quite apparent. Miles and miles of mid-western crops had suffered inundation and been ruined. This was a major alteration of some important wintering waterfowl habitat. How would this affect migration and dispersal. How will the Louisiana hunter be affected? Much of it depended on the severity of the winter now upon us. Band returns by hunters who kill a banded bird and report it may reflect a shift in harvest patterns. This is one factor that banding brings to light.

There is no excuse for a hunter not to report the band number of a bird he has killed. It is crucial data during a time when continental duck populations are low. He doesn't have to send the band back — just the number, date, and location of the kill. He can even call a LDWF district Game Division office and report it to a biologist by phone.

It is estimated that only 32 percent of hunters report their banded birds. This means that more time, money and personnel are needed to band higher numbers of ducks to gain significant data. A lot of time and effort, as well as badly needed money, is expended each year in this vital research activity. The support and cooperation of hunters who bag banded birds is the vital key to success. ■

LDWF file photo

THE PRESENT STATUS OF LOUISIANA'S Oyster Fishery

BY ROBERT ANCELET

From its beginning shortly after the turn of the century, the Louisiana oyster fishery has been a viable industry. Persistent efforts of fishermen and managers have created a major fishery. In recent years, Louisiana has produced 5.4 million Kg of oyster meat annually with a dockside value of more than $25 million. Currently, the fishery is third largest in the state and the largest oyster fishery in the United States. Louisiana's current status as the nation's leading oyster producer is the result of fishery failures in other states rather than an increase in local production.

Louisiana's production is largely raw-shop oysters as opposed to processed breaded, frozen or shucked oysters. Raw-shop oysters are delivered by oyster fishermen to oyster houses where they are shucked and shipped under refrigeration throughout the United States. As a result of care during cultivation, Louisiana's highest

LDWF file photos

The photo above shows the spreading of shells by high pressure water cannons from barges, as preparation for seed beds. On the right is a photo of Louisiana oysters, an oyster drill (conch animal attached to the oyster) and a blue crab.

grade oysters become select counter-stock served on the half-shell at oyster bars and restaurants nationwide.

They begin life as seed oysters in fresher waters where they are fished, carefully culled into single oysters (as opposed to clusters) and then bedded on more saline leases for maturation into a salty tasting, single, round-shaped oyster of unsurpassed quality.

The present system of privatization by leasing waterbottoms to fishermen for the purpose of bedding oysters began in 1902. At that time, Frank Payne, surveyor for the Department of Conservation, envisioned as much as 400,000 acres of waterbottoms under lease. He proved to be a man of vision. Raymond Impastato, the present surveyor for the Marine Fisheries Division of the Department of Wildlife and Fisheries, reports 325,000 acres currently leased.

This system has resulted in a unique and efficient fishery where the right of private property exists as opposed to a public or common property system. Approximately 80 percent of Louisiana's marketable oysters are produced on the 325,000 acres of privately leased waterbottoms, as opposed to 20 percent from 687,681 acres of public grounds.

The 325,000 acres under lease in Louisiana are distributed throughout nine coastal Parishes: Plaquemines, St. Bernard, Terrebonne, Jefferson, Lafourche, Iberia, St. Tammany, Vermilion, and St. Mary. More than 80 percent of the leased acreage is in three parishes: Plaquemines, St. Bernard and Terrebonne. Jefferson and Lafourche parishes contain the bulk of the remaining acreage.

Most successful oyster fishermen maintain several leases in diverse locations, reducing chances of ruination from fluctuating environmental conditions. A fisherman may hold leases in high, moderate, and/or low salinity areas to ensure a harvestable crop from year to year, providing some measure of economic stability.

Louisiana's public grounds have been managed primarily for seed oyster production. This traditional management scheme has served the fishery well. Pawlyk and Roberts, economists at Louisiana State University, were able to show a positive correlation between seed ground production and production in the Barataria Basin system, an area of extensive bedding on private leases. These findings lend credence to the statement that, "seed oyster production on the public grounds, is the heartbeat of the Louisiana oyster industry."

In the 1940s, certain bays were designated as seed oyster reservations and are managed differently than the remaining public grounds. The purpose of seed oyster reservations is twofold: the promulgation of seed oysters and absorption of a portion of the drain on natural oyster reefs.

At present, there are four seed oyster reservations: Caillou Lake (Sister Lake) and Bay Junop in Terrebonne Parish, Hackberry Bay (Bay De Chene) in Lafourche and Jefferson parishes, and Bay Gardene in Plaquemines Parish. These reservations are opened alternately. When Bay Gardene is open, Caillou Lake and Bay Junop are closed.

Spat set (larval oysters) and hydrology are monitored from spring to autumn on productive areas of the public seed grounds. Temperature, salinity, turbidity, and the presence of spat on reefs are recorded, allowing identification of prime areas of seed production and optimum environmental conditions.

Calcasieu Lake, a landlocked embayment

at the mouth of the Calcasieu River, holds approximately 1,000 acres of highly productive natural reefs and is managed as a limited public fishery. Because of the relatively small reefs involved, fishing gear is restricted to tongs, with a daily possession limit of not more than 10 sacks.

An annual stock assessment of oysters on public seed grounds is made to properly manage the season. Biologists establish a population estimate by taking square meter oyster density samples at diverse stations on major reefs. To accomplish this task, divers retrieve all oysters within a randomly-thrown frame that is exactly one square meter. Seed oysters (1-3 inches) and sack oysters (3 inches and greater) are then counted and measured in 5mm size groups. From these data, a total seed and sack oyster availability can be calculated. Also, information such as frequency distributions, mortalities, associated organisms and local environmental conditions are obtained.

Generally, the oyster season in Louisiana begins with the opening of the public grounds at sunrise on the first Wednesday after Labor Day in September and ends at sundown on April 1 of the following year. Seasons may be modified by closing certain areas to harvesting to protect recently set spat (very small oysters less than 1 inch), for health considerations or to prevent premature harvesting in areas of recent cultch planting.

Production on public reefs is monitored by patrolling the reef areas and estimating production. Average daily production of sack or marketable oysters and barrels of seed oysters within established 9-square-mile grids are multiplied by the number of fishable days to yield production per grid, per month. This information shows areas of high or low production as well as the total production.

In order to maintain a high level of productivity, a strong and aggressive management program with definite objectives is utilized by the Department of Wildlife and Fisheries. Management objectives are threefold: (1) habitat improvement without compromising public health, user harmony or product quality; (2) promotion and implementation of research and development programs to increase production; and (3) expansion of the date base for oysters.

Habitat improvement consists largely of "cultch planting," freshwater diversion and oyster relaying.

Cultch planting provides a solid substrate for the attachment of oyster spat. These procedures consist of broadcasting bulk clam shell, reef shell or limestone aggregate from barges utilizing high pressure (90 p.s.i.) water cannons. Predicated on a spat set, small seed oysters will be produced in one year and large seed oyster in two years.

Since oysters survive and grow best in estuaries where salinities range from 10 to 16 parts per thousand, diverting fresh water into saline wetlands will increase favorable habitat for oyster propagation. Lowering salinity limits oyster predators and diseases associated with high salinity while enhancing primary production by adding needed nutrients to the coastal ecosystem. The state has several freshwater diversion projects in various stages of planning or operation, including an operational structure at Caernarvon.

In addition to Caernarvon, local and state agencies have five operational structures along the Mississippi River. The LDWF operates two freshwater diversion structures at Bayou Lamoque on the east bank of the Mississippi River. Plaquemines Parish operates two siphons: West Pointe a la Hache and La Reussite on the west bank of the Mississippi River. Also, Plaquemines Parish operates a siphon at White's Ditch in Belair on the east side of the Mississippi River at the headwaters of Oak River.

Another method employed to increase resource availability is departmentally-supervised oyster relays. Oysters from perennially-closed polluted areas may be cleansed by removing them from restricted areas and bedding them in "approved" areas. After remaining in "approved" areas for a minimum of 15 days, the oysters, having purged any pathogens, become a safe marketable product. These operations are carefully supervised and monitored by biologist and enforcement agents. All fishermen participating in these relays are placed under a performance bond to ensure compliance with regulations.

The two most important problems facing the Louisiana oyster industry today are pollution and saltwater intrusion. Many prime oyster-growing areas are becoming less productive due to saltwater intrusion from channelization, reservoir construction, channel straightening, alteration of drainage patterns and canal dredging. This saltwater intrusion has resulted in the shifting of oyster production farther inland and, thus, closer to human habitation and development. That proximity increases chances that waters could be contaminated by industrial and/or sewage pollution. Sewage pollution has become a matter of major national concern.

Since the Louisiana oyster fishery is a valuable and productive resource employing many participants and handlers, extensive regulations are required in order to govern harvest, processing, shipment, and storage. The LDWF controls the harvest of oysters on the public seed grounds, while the Department of Health and Hospitals checks all phases of the oyster industry — fishing, wholesale, distribution and retail handling — for compliance with the National Shellfish Sanitation Act. The Department of Agriculture, Division of Weights and Measures is charged with administering how oysters will be packaged, labeled and measured. The Department of Environmental Quality (DEQ) monitors water quality for shellfish propagation, a program that includes monitoring various chemical pollutants as well as point source and non-point source fecal coliform (sewage) contamination.

Although diseases of oysters do not directly affect people, the oyster can and does act as a mechanical means of transmitting human diseases when taken from polluted waters and consumed raw. With the discovery of shellfish-related diseases, particularly typhoid fever, in the early 1920s, the state and federal governments developed and adopted the National Shellfish Sanitation Program (NSSP). To promote conformity within the NSSP, officials from Louisiana and 22 other states met with the U.S. Food and Drug Administration (FDA), the National Marine Fisheries Service (NMFS) and the U.S. Department of Commerce (DOC) to establish the Interstate Shellfish Sanitation Conference (ISSC) in 1982. Guidelines set forth in the NSSP Manual of Operations, Part I and II, comprise the official criteria for the classification of shellfish growing waters based on fecal coliform bacteria levels. In Louisiana, the Department of Health and Human Resources (LDHHR) is the legal authority performing field sampling and laboratory analysis in order to classify the shellfish growing waters. The Department of Health and Hospitals inspects for sanitation compliance at oyster processing and retailing facilities.

The LDWF Enforcement Division enforces all fisheries laws. Within the Enforcement Division, a specialized four-man Oyster Strike Force concentrates on oyster laws.

All edible shellfish shipped from Louisiana must be tagged by a certified dealer who must maintain records indicating the source of each lot of shellfish. Certified interstate dealers, shippers and firms in compliance with the NSSP are listed in the FDA's monthly publication, the "Interstate Certified Shellfish Shippers List (ICSSL)." Retailers are required to buy shellfish only from listed sources.

Although the fishery has become large, complex and besieged with problems, the countless number of participants, including users, managers and researchers, continue to make the Louisiana oyster industry a success story. ■

OYSTER HARVEST IN LOUISIANA (IN MILLIONS OF POUNDS)* AND THE RESPECTIVE PERCENTAGE COMPARED TO THE GULF OF MEXICO AND TOTAL U. S. LANDINGS

YEAR	LOUISIANA LANDINGS	GULF OF MEXICO OYSTER LANDINGS	TOTAL U. S. OYSTER LANDINGS
1981	9.0	17.1 (53%)	50.1 (18%)
1982	12.0	24.2 (50%)	54.4 (22%)
1983	13.3	27.7 (48%)	50.2 (26%)
1984	14.0	24.4 (57%)	48.3 (29%)
1985	14.2	25.4 (56%)	44.2 (32%)
1986	12.6	22.5 (56%)	44.2 (32%)
1987	12.0	18.7 (64%)	39.8 (19%)
1988	13.3	16.3 (82%)	31.9 (42%)
1989	11.6	15.8 (73%)	29.2 (40%)
1990	8.2	14.7 (56%)	29.2 (28%)
1991	7.3	13.7 (53%)	31.8 (23%)

* *Historical Catch Statistics — National Marine Fisheries Service*

Kisatchie Suffers Loss To Deer Herds

LDWF file photo

BY SARA [illegible] HARRIS

Wildlife managers, sportsmen and public officials do not always agree on how Louisiana's deer herds should be managed. As it became evident that the deer on Kisatchie Forest were in trouble, deer specialists were forced to take the lead.

White-tailed deer have been managed intensively on public lands in Louisiana for more than 30 years. Across the state, Department of Wildlife and Fisheries' deer resource specialists have successfully maintained deer herds at "carrying capacity" — ideal numbers for the food and cover available on specific tracts of land. Recent aggressive land acquisition and cooperative management agreements have brought the wildlife lands system to more than one million acres.

Resource managers construct management plans based on such factors as condition of the habitat, size of the herd, ratio of bucks to does, hunting pressure and harvest success. The objective is to build a healthy deer population and, at the same time, provide abundant recreational hunting opportunity. Louisiana Department of Wildlife and Fisheries Deer Study Leader Dave Moreland explains, "It is important that everyone have a place to enjoy recreational deer hunting. That is one of the primary functions of the state's deer management program. Our job is to simultaneously manage for recreation and maintain the deer herd."

Coordinator of the LDWF Deer Management Assistance Program (DMAP) Clyde Vienne added, "Stability is the goal. When the department acquires a piece of land for public use, we evaluate the current condition of the herd and determine the optimum number of deer for that land and type of habitat. We make management decisions ac-

LDWF file photo

Ideal white tailed deer habitat is an open canopy. It promotes growth of important food plants or deer browse. Right, Clyde Vienne, LDWF, and Viola Richie, USFS, survey deer browse to determine if herd size is effected by shortened hunting seasons.

Photo by James Caldwell

cordingly. If we do our job well, the herd gradually reaches the desired level and stabilizes there."

The long-term success of the intensive deer management program is attributed to careful monitoring of herds and consistent use of proven techniques. Two such techniques on government-managed lands are short hunting seasons and the either-sex harvest. LDWF has produced great improvement to deer herds by using 10- to 20-day hunts that include 1- to 3-day either-sex harvests throughout the Wildlife Management Area (WMA) system.

The premise is that when managing public land, the most practical method is to limit the number of days of hunting, rather than restrict the number of hunters allowed on the land. Also, in order to maintain a balanced ratio of bucks to does, both sectors of the population must be harvested.

"There has been one notable exception to this approach to setting deer seasons on lands managed for the public," Vienne points out. "Long seasons and a bucks-only harvest have traditionally been used in Kisatchie National Forest." This single national forest in Louisiana is composed of eight tracts of land located in central and north Louisiana. Owned by the United States Forest Service, the 600,000 acres of loblolly/short leaf pine, longleaf pine and mixed pine/hardwoods are cooperatively managed for multiple uses by the Forest Service and LDWF.

In the late '80s, resource managers monitoring the deer herds noted a definite drop in numbers of white tailed deer on almost all of the property. It was clear that white-tailed deer were below the carrying capacity of the land. The managers became alarmed at the scarcity of deer. They analyzed available data in search of a solution to the problem.

There are two designated preserves in the national forest: Red Dirt Wildlife Management Preserve in Nachitoches Parish and Catahoula Wildlife Management Preserve in Grant and Winn parishes. They total 74,000 acres. Annual harvest data indicated there were far more deer on these preserves than in the rest of the forest. Why the difference? The most obvious answer: the deer hunting seasons on these particular areas were structured differently than seasons for the rest of the forest. On Red Dirt and Catahoula, managers had been using the same short-season, either-sex hunt approach as used on other public land. It became clear that the liberal allowance of hunting days on the greater portion of the national forest was creating excessive pressure on the deer. A change was imperative.

"We feel confident in stating that the reduction of the deer numbers on Kisatchie was caused in part by too many deer, both bucks and does, being removed. The long season was contributing to this," explained Larry Soileau, LDWF Wildlife Division programs manager.

"Exacerbating the problem was the fact that demand for free deer hunting land was growing dramatically as more and more forested lands were closed to the public by private club leases and landowner postings," Soileau added. "We felt sure the problem was only going to get worse."

LDWF and the USFS worked together and arrived at a decision to reduce the number of gun hunting days on Kisatchie.

At the February 1990 meeting of the Wildlife and Fisheries Commission in Lake Charles, then LDWF Deer Study Leader Jerry Farrar presented an explanation of the problem. The first of three deer hunting season public hearings was being held in concurrence with the commission meeting. Farrar proposed a solution: a reduction from 56 to 21 days in the gun hunting season on the areas of Kisatchie National Forest where the herds were in trouble.

Using LDWF's News Service, every newspaper, television station and radio station in the state as well as sportsmen's associations, legislators, and numerous other interested parties were informed of this first public hearing on deer hunting. The News Service followed with a full description of the proposal for bolstering the deer population on Kisatchie National Forest and a request for comments from interested persons.

In addition, a forum for discussion of methods used in setting deer seasons, deer biology and management, and related topics was established by the department. The USFS conducted public meetings as well to allow comment and discussion of the proposal.

After weighing the public comments and biological information, the Louisiana Wildlife and Fisheries Commission reduced the deer gun season from 56 to 21 days on most of Kisatchie National Forest at its regular October 1990 meeting. There were to be no changes on Red Dirt Wildlife Management Preserve or Catahoula Wildlife Management Preserve. Seasons on the Forest Service's Caney District in north Louisiana were also unchanged because deer numbers there remained relatively high.

The still hunting season was set at 12 days; deer hunting with dogs at seven days; muzzleloader hunting at two days. There was a two-day either-sex hunt included in each of these sets. News of the change was circulated widely across the state.

"Essentially, all deer hunting seasons on the national forest have been brought into line with those on the rest of the lands managed for the public in the state," explained Vienne. A great deal of thought has gone into the current season structure. Immediate changes in the condition of the herd are not expected. A 5-year monitoring program on Kisatchie is in place. LDWF staff and Forest Service biologists are conducting an annual browse, or deer food, survey on all of the Forest Service's land. "Our primary objective is to measure the degree of deer utilization of browse," explained Vienne. "Feeding activity, of course, serves as a measure of herd size. The question we want to answer is: Has the shorter season and either-sex harvest enlarged the herd?"

In projecting improvement to the herd, resource managers must also analyze the ability of different habitat types to support deer. Mixed pine/hardwood sites provide distinctly different elements to a deer herd than pure longleaf pines sites, for example. LDWF-collected data indicates that hunters harvest one deer per 101 acres on mixed pine/hardwood habitat, in contrast to one deer per 346 acres on longleaf pine areas. In addition, the average live weight of male deer on the mixed pine/hardwoods is 185 pounds for 2 1/2-year-olds and 228 pounds for 3 1/2-year-olds, while it is 130 and 135 respectively for the same age and sex animals on longleaf pine forested lands.

Administrators of Kisatchie National Forest are also reworking the multiple use management scheme for the forest. Decisions made on the management of timber, in particular, will greatly impact development of the deer herd on Kisatchie.

Wildlife managers must also factor in the attitudes of hunters. There are still mixed feelings among hunting groups on the topic of deer hunting seasons on Kisatchie. In order to accurately test the new season structure and its effectiveness at bolstering the deer herd on Kisatchie, the department must rely heavily on the support of sportsmen. Deer season is open and now it's the hunter's move. Cooperation and compliance with the new regulations will make a pro-deer statement. It is the strongest stand a hunter can take for the protection and enhancement of his sport. ■

Deer hunters make strong pro-deer and pro-hunting sports statements in their compliance with the new regulations at Kisatchie Forest.

LIFETIME LICENSE

An Investment in the Future of Louisiana's Wildlife and Fisheries

Louisiana first introduced the lifetime hunting and fishing licenses almost two years ago. Since then, hundreds upon hundreds of Louisianians have taken advantage of the savings. The Louisiana Conservationist honors the lifetime license holders by listing their names in the "Conservation Notes" column of each issue. However, the list of names keeps growing, so we have taken some extra space and listed those who purchased a lifetime license from June 14, 1993, through November 17, 1993.

The purchase of a lifetime license is a true value. It serves as a savings investment for the sportsman as well as an investment in Louisiana's wildlife and fisheries. For more information on how to obtain a lifetime hunting or fishing license write to Lifetime License, Louisiana Department of Wildlife and Fisheries, P.O. Box 98000, Baton Rouge, LA 70898 or call (504) 765-2887.

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SMITH, CHARLES R	*WEST MONROE*
SMITH JR., SAMUEL	*DEQUINCY*
SMITH, KIRK Z	*MORGAN CITY*
SMITH, LON A	*SHREVEPORT*
SMITH, MARK S	*NEW ROADS*
SMITH, MICHAEL J	*BERWICK*
SPICER, MARSHALL E	*HACKBERRY*
SQUYRES, CHRISTOPHER	*ALEXANDRIA*
STACY, SCOTTY A	*SULPHUR*
STEEN JR., GENE H	*BATON ROUGE*
STEPHENSON, BRYAN	*BASTROP*
SUHREN III, A. CHARLES	*METAIRIE*
TAFFI JR., DONALD J	*VILLE PLATTE*
THAYER, CHRIS B	*BATON ROUGE*
THERIOT, ROBERT G	*MORGAN CITY*
THEVENET, JOHN	*ST. MARTINVILLE*
THEVENET, RENE' G	*BREAUX BRIDGE*
THOMASON III, NEAL	*WEST MONROE*
TRAHAN JR., RICHARD	*METAIRIE*
TURNER, THOMAS H	*BATON ROUGE*
VERLANDER JR., ELMORE	*NEW ORLEANS*
VOCKE IV, EDWARD C	*KENNER*
WADDELL, JASON L	*ZACHARY*
WADDELL, JONATHAN	*ZACHARY*
WADDELL, STEPHEN	*ZACHARY*
WALKER, MARK M	*BATON ROUGE*
WALKER, MICKEY A	*SHREVEPORT*
WALKIN, PATRICK P	*LAKE CHARLES*
WARD, CHRISTOPHER	*PORT ALLEN*
WATTS, THURSTON F	*BATON ROUGE*
WELLS JR., RONALD	*PRAIRIEVILLE*
WHITE, ROBERT B	*BASTROP*
WICKBOLDT JR., STEPHEN	*BATON ROUGE*
WILLIAMS, JAMES R	*SLIDELL*
WILLIAMSON, CASEY	*RUSTON*
WILSON, LARRY W	*RUSTON*
ZEIGLER, M. BRENT	*DENHAM SPRGS*
ZERINGUE, BLANDON	*DES ALLEMANDS*
ZERINGUE JR., TERRENCE	*BATON ROUGE*

Photo courtesy of John Forester, USFWS

STRIPED MENACE

Louisiana's freshwater is providing a home for a harmless-looking mollusc the size of a fingernail that is causing millions of dollars in damages.

BY CLIFTON COLES

Mississippi River currents and barge traffic are aiding the spread of what biologists fear may be a serious problem for Louisiana's freshwater-related industries. The zebra mussel is making its way south from the Great Lakes down the Mississippi River. Along the way, it is clogging municipal water intake systems and destroying the environment for some indigenous freshwater species.

As zebra mussels proceed on their southward trek, they continue to confound previous scientific research. "Biologists never thought this species would come this far south and be able to live and breed," said Thomas Dietz, professor of zoology at Louisiana State University, "but here they are." Dietz pointed to a 1992 book devoted to zebra mussels. "It was outdated almost as soon as it was published."

As part of a joint state/federal effort to monitor zebra mussel spread, the U.S. Fish and Wildlife Service began taking samples at Greenville, Miss., in June 1991. No zebra mussels were detected until the summer of 1992 when larvae and juveniles were collected at Greenville and Vicksburg.

By the summer of 1993, the species was reported in the Mississippi approximately 12 miles below Belle Chasse. Zebra mussels were also verified at Berwick/Bayou Vista Waterworks, a municipality on Bayou Teche downstream from the Atchafalaya River. This is the southernmost verified location of zebra mussels in the United States.

Baton Rouge's first zebras, found in June 1993 at Dow Chemical's Plaquemine plant, numbered 50-100 per square meter, according to Dietz. This is an insignificant number when compared to 800,000 per square meter reported in some Great Lakes' ports. Nevertheless, companies like Dow will spend hundreds of thousands of dollars on cleanup and future prevention, and the effort will be ongoing. As long as zebra mussels are here, industries can expect problems.

Zebra mussels, characterized by a wedge-shaped shell with varying degrees of striping, live in colonies of hundreds of thousands clinging one on top of another to a hard substrate. Each mussel is equipped with tiny tendrils that wind around parent surfaces and among fellow mussels, forming a tight and complex web of mollusks.

Any surface will do, so long as it is hard, stable and at least partially submerged. Buoys, rocks, piers, pilings and boat bottoms have all provided colony beginnings. Colonies have even been discovered on larger mussels and crustaceans.

Older mussels that die under the weight of younger generations continue to add to the hard substrate. Even though the zebra mussel only grows to a maximum size of 2 inches, the thousands in a colony can be 18 inches deep.

Potential to cause damage grows as the colony grows, especially if industrial intake pipes are chosen as a colony site. Clustered mussels can clog a pipe's entire inner circumference, impeding necessary water flow.

Though birds and certain fish prey on zebra mussel larvae, adults have few enemies. Even if a colony is attacked, the threat to individual mussels is minimal because of the size of the colony.

They also reproduce rapidly. A female can produce more than 30,000 eggs in a six-month period. Larvae hatch in only a few days and, within three weeks, have grown into recognizable, shelled juvenile zebra mussels. At these stages, the young are vulnerable to predation and most don't survive.

Once they find a suitable substrate and colonization begins, however, their defenses are almost impregnable.

The biology of the species also impacts negatively on native aquatic life. A Louisiana State University Sea Grant report notes that each adult mussel "can filter approximately one liter of water per day through its body." The water contains tiny particles including phytoplanktons upon which the animals feed. Zebra mussels, the report continues, "don't pass uneaten phytoplankton back into the water for other animals to consume. Instead, they bind the uneaten food into pellets . . . depositing them within the colony. This process leaves little food for other aquatic life."

The zebra mussel (*Dreissena polymorpha*) was originally limited to cold estuaries of north and central Europe. There, as in the United States, it is considered a serious problem.

In the Netherlands, for example, the species invaded in the 1830s, but suitable habitat increased in the 20th century when freshwater lakes were created through damming. In 1936, Lake IJsselmeer, separated by a dam from the North Sea, reported zebra mussels only on its northern edge. By 1938, they were distributed throughout the entire 1,400 square mile lake.

The species was first discovered in North America in 1988 in the Detroit area. Investigators believe individual mussels had survived in ballast water of European vessels traveling via the St. Lawrence River to Lake Michigan.

They have since been discovered in every major Great Lakes port. Many nearby ponds in Michigan, Indiana and Ohio also have been invaded. The mussels have spread north up the St. Lawrence River and south down the Illinois River to the Mississippi. They have spread to the Tennessee, Cumberland, Ohio and Hudson Rivers, lakes in Kentucky, Indiana and West Virginia, and followed the Arkansas River into Oklahoma.

Unfortunately, no one believed the zebra mussel would get as far south as Louisiana. The species seemed to prefer cool waters, and the Mississippi River was thought to be too warm in our state. But water temperature no longer appears to be as limiting a factor as once supposed. The entire length of the Mississippi is now providing suitable habitat.

Zebras are also attracted to swift currents, making water intakes and marine motor cooling systems perfect environments. They have used this to their advantage to help expansion.

Zebra mussels will not survive for long when exposed to open air. Water salinity also limits its expansion. High salinity in Lake Pontchartrain makes it unlikely that they will spread to that water body.

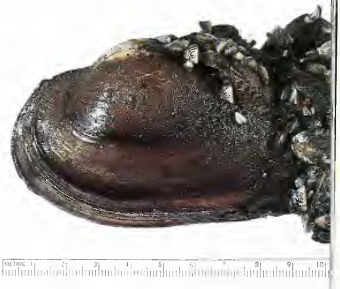
Prevention of infestation is difficult, time-consuming and expensive. Hardest hit are the municipal sectors dependent upon Mississippi River water. Any company or municipality using water from affected systems can expect problems.

Once the news reached Louisiana, industries began to take precautions. Valves, screens, pumps, pipes and other parts of industrial water systems, as well as locks and other water structures that see plenty of boat traffic, were subjected to stepped-up inspections. A large industrial plant may have hundreds of screens like the ones at Dow Chemical where zebras were discovered. Each screen must be examined on a regular basis.

Once infestation has occurred, it can cost millions of dollars to remove the mussels and repair or replace equipment.

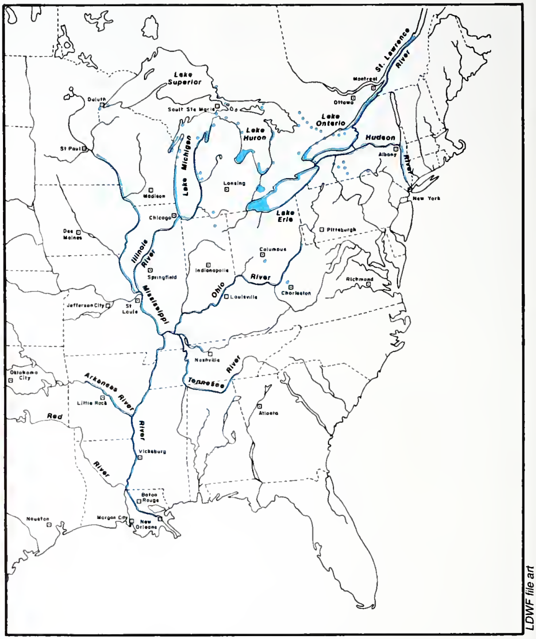
Although crustaceans in Lake Erie have

In relation to the other molluscs on which it hosts, zebra mussels are tiny. But the damage they do is enormous. The bottom photograph was taken at a Great Lakes plant, infested with zebra mussels. Such colonies impede necessary water flow.



Photos courtesy of Thomas Dietz

Zebra mussels were first discovered in the United States in the Detroit area in 1988. They have since spread and now the entire length of the Mississippi River is providing suitable habitat.



LDWF file art

Photo by Andy Crawford

If you come across a zebra mussel, don't discard it into the wild. All sightings should be reported to the U.S. Fish and Wildlife Service.

been found covered with zebras, there have been no reports to date of mussel infestations in Louisiana's crawfish or other seafood populations, according to Gary Tilyou of the Department of Wildlife and Fisheries' Inland Fisheries Division.

At this point, the only option is to control expansion. "The zebra mussel is going to spread, there's no doubt about that," said Dietz. "The challenge is to minimize spread in regions surrounding the Mississippi." Recreational and commercial boaters can play a vital role.

Mussel colonies form on rock, metal, vinyl, glass, rubber and fiberglass. Washing boat bottoms, careful inspections, proper disposal of bilge water and other safeguards should be carried out on a regular basis. It is especially important to take these measures when moving from one body of water to another.

Any part of a vessel that comes into contact with water can provide a clinging spot and must be inspected regularly. That includes all boat hulls, motors and trailers.

Regularly draining and rinsing bilges and other compartments where water tends to stay is essential. When compartments are emptied, care must be taken to make sure any water, aquatic organisms or bottom material is not carried from one place to another.

A 10 percent bleach solution or a salt solution (half a cup of salt per gallon of hot water) can be used to disinfect compartments, but the solution must not be allowed to escape into natural waters.

If zebra mussels are found, don't keep them or release them in the wild. The only effective practical method for destroying them is prolonged exposure to air or salt water.

It is important that all zebra mussel sightings be reported to the Department of Wildlife and Fisheries or the U.S. Fish and Wildlife Service. The USFWS has been compiling information since 1991 and needs to be provided with data in order to properly monitor future expansion of the infested range. ■

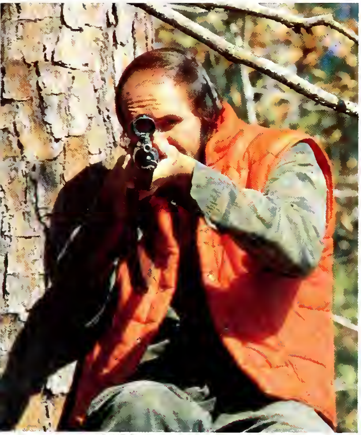
Photo by Bill Kinney

WHY MEN HUNT

From a speech given by John Madson during the First Governor's Symposium on North America's Hunting Heritage

Fifteen years ago, when my friend John Mitchell was writing *Bitter Harvest*, he solicited my views on hunting.

We spent most of a day in a johnboat on a Mississippi River backwater while he asked penetrating questions and I provided fuzzy answers. He finally observed that my perceptions of hunting were metaphysical — and he was right, supporting Voltaire's contention that "When the speaker and he to whom he speaks do not understand, that is metaphysics."


LDWF file photo

I once spoke at a seminar of biologists and offered some general, rather superficial reasons for why men hunt deer. They do so for many reasons, any one of which may be enough.

A common one, of course, is the meat reason. The woods are full of people who claim to be hunting for prime meat, although I've a hunch that this is a standard alibi for busting the first deer that comes along. Yet, there are some real meat hunters — men who are pretty good at judging wild meat on the hoof, and who have the patience and experience to carefully pick and choose, and who take pride in the quality of their venison. There are still a few old hands who will pass up a trophy buck for a plump little forkhorn — although they are often experienced hunters who have already taken their share of trophy bucks.

Then, of course, there's the trophy reason.

In its shallowest context, it is simply an exhibitionist effort to display prowess and status. In a deeper context, it goes beyond that.

Aldo Leopold once observed that "Poets sing and hunters scale the mountains primarily for one and the same reason — the thrill to beauty. Critics write and hunters outwit their game for one and the same reason — to reduce that beauty to possession."

Those trophy antlers on the wall may not be only a hunter's effort to possess beauty, but also to keep something important to him from slipping away and being forgotten. And if the trophy testifies that here is a strong and skillful hunter — well, what's the use of denying it?

And so the great stag has been stalked and taken.

Ten thousand years ago the hunter might have stood by a fire and recounted the great deed to his clan brothers, while the old men nodded their approval and stripling boys back in the shadows listened in wonder. It hasn't changed much. The trophy hunter, the ethical killer of the great stag or bear or ram still commands attention by the fire as he recites his deeds. His peers still salute him, the old men still nod and remember, and boys still dream of tomorrow's hunts.

Most of us will never kill the great stag. Yet, we have all taken deer that held special trophy value for us, and such value is not always a measure of tine and beam. It may be just a measure of hard, solid hunting in which both man and deer conducted themselves well, so that neither was shamed.

Trophy hunting has been bitterly condemned for an alleged deterioration of a game stock by killing off the best males. Yet, neither the mathematics of genetics nor the observed facts of breeding within wildlife populations add support to that contention. A five-by-five mule deer buck is nearing the end of his days and has already done his share of genetical work. Still, that is empty sophistry if the taking of that trophy is unethical — in which case it is not a trophy at all.

Companionship can be a strong element in hunting. For as long as men have hunted, they have banded into special hunting packs with their own taboos, traditions and rituals. And sometimes the companionship and the rituals become more important than the hunt itself, and sometimes the greatest pleasure is in anticipation and recollection, with the hunt only serving to bond the two.

A considerable part of our modern sport hunting (as with much of our daily living) is the exercise of technology. That is, the employment of gadgetry for its own sake. I plead guilty to that in part, for a fine rifle or shotgun plays a significant part in my enjoyment of hunting. I admire the skill and artistry that go into the making of such guns — but I am uninterested in any gun, however beautifully wrought, if I cannot shoot it well. I count myself as a good shot. When the day comes that my eyes and reflexes impair that ability, I will not hunt again.

Our critics are fond of pointing out that wildlife has scarcely a chance against our highly efficient technology. But the fact is, wildlife has an edge of its own — and it is likely to be enhanced by our increasing dependence on gadgets and less reliance on our legs, eyes, ears, patience and the savvy that accrues from years of experience. A good working definition of a game species is one that is fitted with survival equipment enabling it to take advantage, while a genuine sport hunter is one constrained by ethics and respect to give advantage.

But as much as anything else, one of the greatest urges impelling such a hunter is his search for freedom, and for the genuine personal adventure inherent in such freedom. Just as game species may be the truest indicators of quality natural freedom.

Dr. Murdock Head told of a noted physician who was visiting an Adirondack deer camp for the first time. He was not a hunter; it was all new to him. As he stood by the cabin door one evening, watching hunters dress deer while their companions offered unsolicited advice, listening to the good laughter and easy talk, the doctor turned to his host with a look of sudden comprehension, and said: "Why, these men are free!"

Pascal once observed that the virtue of hunting is not in possessing game, but in the pursuit of it. By being absorbed in looking outward for game, "the hunter is absolved of the really insupportable task of looking inward upon himself." And so the hunter's eyes are directed outward instead of inward, and myriad nagging, worrisome concerns are overlain with the illusion of being part of an older, freer world.

I once asked an old river rat of long acquaintance why he was such a deeply-committed hunter.

He thought for a moment and replied: "Why — to git away from the house and git out amongst'em mainly..."

Homer once said much the same thing: *Manet sub iove frigido Venator/Tenerae coniugis immenor*, which renders out as "The hunter goes his way 'neath frigid skies unmindful of his tender spouse."

Theodore Roosevelt was far more diplomatic about it: "Sweetest little wife, I think all the time of my little laughing, teasing beauty...and I could almost cry I love you so. But I think the hunting will do me good."

(I know wives that would agree; hunting gets their husbands out from underfoot during a time of year when they're not much good around the house, anyway.)

The genuine hunter is probably as free as it's possible to be in this technocracy of ours. Free not because he sheds civilized codes and restraints when he goes into the woods, but because he can project himself out of and beyond himself, out of and beyond the ordinary, to be wholly absorbed in a quieter, deeper and older world.

You know how it is. When you go into the woods your presence makes a splash, and the ripples of your arrival spread like circles in water. Long after you have stopped moving, your presence widens in rings through the woods. But after a while this fades and the pool of silence is tranquil again and you are either forgotten or accepted — you are never sure which. Your presence has been absorbed into the pattern of things, you have begun to be part of it, and this is when the hunting really begins.

You can always feel it when those circles stop widening; you can feel it on the back of your neck and in your gut, and in the awareness of other presences. This is the real start of the hunt, and you'll always know when it happens and when you are beginning to hunt well.

There were those times when I was a kid, hunting and trapping and sometimes spending several days and nights alone in the woods, when I'd have a flash of insight that was often gone as swiftly as it came — a vague sense of what aboriginal hunters must feel and what real hunting, the pure-quill honest-to-God real hunting, is all about. One strong flash of this to a boy — one swift, heady taste of an utter wild freedom and perception — is enough to

When you go into the woods, your presence makes a splash and the ripples of your arrival spread like circles in water.

keep him hunting all his days. Not just for meat or horns, but for that flash of insight again, trying to close the magic circle of man, wildness and animal.

Is blood lust a prime motivation of hunting, as some of our critics contend? The late Dr. C.H.D. Clarke pointed out that perverted and inadequate people may indeed hunt, but contended this is not the story of hunting.

The human investment of hunting with magic, he felt, was a logical development of being able to think about nature and wonder where the next feast was coming from. When the magic is truly embedded, it is part of our inheritance. Hunting still has (for some of us) its pre-human excitement and prestige, and its human magic, and when we hunt there is a deep satisfaction that comes from a contact with nature that is healthy and traditional. Blood lust is not. The deepest fear of the primitive hunter is offending the spirit of the game. Clarke once saw an old Eskimo who, when young, had been deliberately blinded by his fellow hunters. They were afraid because the man had been disrespectful to a caribou he had killed. For such a sin there had to be a terrible expiation. We do not do that anymore, nor do Eskimos, but the unethical hunter is at least uneasy — and if he is an Eskimo he may be afraid.

Sport hunting, Clarke went on, can surely put us inside the world of nature. The real hunter does not go into that world of nature as a casual onlooker, but as an active participant.

Speaking personally, there are many uses of outdoor October, and I savor them all. I could drink that ale-golden month to its dregs and never touch a gun. But without hunting, some of the savor would be missing. Lovely and rich as autumn would still be, a certain condiment would be gone and I think I know what it is. It is seeing grouse and pheasants and quail and mallards at closehand as any predator might, and seeing how fine-tuned, ingenious and intricate their responses to predation can be. I might watch game birds and animals at all seasons under a full range of conditions, and yet never know them as I do when I am hunting them well and they are doing their usual fine job of parrying my thrusts.

Hunters may try to reduce their motives to such tangibles as trophies, meat, good dogwork, companionship, exercise, freedom in quality environments or simply "adventure." Underlying all that, however, are deeply-embedded reasons that neither hunter nor psychologist is really equipped to fathom.

Our severest critics are much surer of themselves. The kindest thing they say about us is that we are cruel and dangerous children; at our worst, we are barbarians that revel in the joy of inflicting pain and death. And there is some truth in all of that. We cannot deny that such hunters do exist; to do so is to delude ourselves. On the other hand, the shrill anti-hunting critics seem unable to understand the motives that impel what I choose to call the "genuine hunter." That is, the person with a deep personal bond to the game he hunts and the habitats in which he hunts it. Such emotion can result only from the respect which grows from experience and reflection.

Our critics deplore hunting on an emotional basis, just as we hunters defend it. Each extreme would do well to share a more objective position. Both hunter and anti-hunter should be governed by sound biological principle. Hunting cannot be condoned if it is not based on biological management and does not demonstrate respect for game and the habitats in which it is hunted. On the other hand, hunting is best defended by adherence to sound biological principles and demonstration of a genuine respect for nature.

Why do men hunt? It goes far beyond anything I've said here. How can one explain the inexplicable? But after more than 50 years of hunting, I'm pretty sure of two things: that hunting is too deeply rooted in the metaphysical to allow clinical examination and that it's a happy man who keeps his youthful appetite for that sort of mataphysics. ■

Pearl River Panfishing

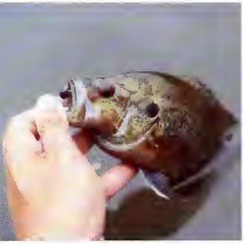
STORY AND PHOTOGRAPHY BY HUMBERTO FONTAVA

An 8-year old, gently shaken at 6 A.M. on a Saturday and told that the boat is ready and the bayou beckons, reacts in a manner that can only be described as frantic; out of bed, into his clothes and through his breakfast in a reckless blur.

Gently shaken at the same time on a Wednesday and told that it's time for school, the response is markedly different. A glacier might well carve a new fishing spot by the time he's ready.

In my case, three youngsters aged six to ten dressed, ate and jumped into the back seat in 15 minutes. A new record.

But before the bayou, there was the ditch. For us, roadside ditches are simply a network of semi-permanent live-bait wells at a price that's hard to beat. Free of most predator fish, these ditches hatch and incubate a veritable broth of panfish fodder. Not that there's anything wrong with store-bought crickets, worms and minnows. But catching the bait is as much a part of the ritual as making the lemonade and sandwiches in this crowd. Fish



Any catch, no matter what size, can bring excitement to a young fisherman.

seem to hit harder, fight longer and taste better when caught with little creatures scooped with long-handled nets by grinning youngsters — or maybe it's just my imagination.

I sometimes wonder if kids don't enjoy catching the bait more than catching the fish. "Daddy!" Monica yells "I wanna scoop first."

"No me!" yells Robbie.

"No me!" retorts Mickey.

"Alright, alright. We'll take turns. Ladies first. Go ahead Monica."

Three long scoops along the weed-lined bank and the net is filled with a flopping, flicking panfish buffet—crawfish, minnows and grass shrimp. These scoops also yield a few surprises.

"Daddy!" squeals Robbie. "What's this?"

"Why that's a...SNAKE! LOOK OUT!...No wait. It's not the bad kind. It's a red-bellied water snake. A baby one."

Yep, there's always a little excitement during bait procurement, and usually a biology lesson. "See that?" I point with a professorial pout. "That, class, is a dragonfly larvae. That thing turns into a mosquito hawk."

Twenty minutes later we launch into the Middle Pearl River near the Louisiana-Mississippi border. Ten additional minutes and we anchor in the millfoil-clogged water at the mouth of a small canal and cast out four lines.

The corks were motionless for five minutes and I knew I didn't have long. The enthusiasm of bait-catching had waned and the kids were starting to squirm. I could sense the morning's tranquility evaporating faster than a Saint's lead in the fourth quarter.

"Daddy, Monica won't move over." Here we go, I thought.

"Daddy, Mikey splashed water on me." My face was in my hands.

A distraction was needed, and quickly. I turned to the corks in desperation and one started twitching.

"Monica! Your cork!" I yelled with the tone of a man just released from death row. "It's moving!"

I was saved. The twitching cork had become the new center of attention, and not a second too soon. "Wait for it to sink," I coached, "Then let him have it."

"There goes mine!" Robbie squealed and I turned in time to see his bobber submerge without the preliminary twitching. Robbie yanked back, the water erupted and he started cranking the little Zebco like an organ grinder. I hadn't seen this look on his face since he came down the stairs Christmas morning.

Then Monica's cork plunged and both were tussling with scrappy panfish of undetermined species. My guess was little yellow bass (the ones most of us call barfish in southeast Louisiana), but they might be anything from channel cats, to bluegill, to gaspergou.

That's the beauty of this type of fishing. Put a little crawfish or grass shrimp three feet under a cork and toss it near weed beds in the lower Pearl River basin when the river's low (summer, fall) and you might pull out anything, including a redfish.

Robbie heaved his fish into the boat first. It was a chunky bluegill with a bulging forehead and deep crimson belly. "A nice one, Robbie" I gushed. "He's big enough to fillet." Robbie was beaming.

Seconds later Monica yanked aboard a little barfish (yellow bass, technically) only slightly longer than the bluegill. "Heck we've already got a sandwich with these two!" I said as she started prying the little hook free. Then Mikey's cork started bobbing.

Disaster had been averted. The rest of the morning was a frenzy of disappearing corks, bent poles and delighted juvenile shrieks. Who am I kidding...the loudest shrieks came from ME!

Panfish in a feeding frenzy do that to me. Last weekend I'd been wrestling wahoo and tuna bigger than the kids into my boat in a relatively sedate manner. Now 8-inch fish completely shattered my composure.

Any panfish aficionado can explain it. Any father can too. Five fish into the morning I gave up even trying to fish and devoted myself to helping bait hooks, remove fish and lace the air with parental advice, sometimes with all the finesse of a Marine drill sergeant.

"Set the hook, for Heaven's sake, set the hook!" I'd howl after a cork came bobbing back to the surface. "Keep a tight line!" I'd screech when a strike was missed. "You missed a good fish!" Tournament fishermen with $150,000 at stake get less emotional.

Then the boat started rocking gently and I looked toward the opposite bank. A bass boat was idling by. Two occupants with caps on backwards stared at us in bemusement. "Mickey" I hissed. "Lift the fish basket."

The bassers nodded approvingly, one giving the thumbs up signal. Then they gunned it.

With three corks in the water at least one was twitching or plunging at all times. In between, I could look around at a panorama that tourists from around the world pay good money to behold--the Pearl River Basin in all it's glory.

Actually, this was the transition zone in the Basin, and the most visually stimulating, in my opinion. Here cypress-tupelo swamp starts giving way to fresh water marsh of Rousseau, Maidencane, Bull Tongue and Iris. This is the type of landscape favored by bald eagles. I scanned the skies hopefully, but none showed up.

I couldn't complain. Not with Ibises gliding overhead, herons and egrets stalking the shorelines, gaudy purple gallinules prancing through the bull-tongue and grackles providing background music with their squeaky din.

The basket steadily filled with panfish, and even a few largemouth bass. Crunchy bass fillets fit quite nicely into our fish fry that night.

Little panfish fillets, fried in a crunchy mustard batter and dipped in homemade tartar sauce, or arranged on buttered toast and covered in ketchup, are culinary sensations. One taste is enough to turn almost anyone into a panfisherman, again.

I say again because this is where most of us started--with little corks, long shanked hooks and spit-shot sinkers. For some of us, the simple fun of this type of fishing never fades.

I'm convinced that God created panfish with kids in mind. Especially today's kids. Those 10-second attention spans won't stand still for anything else.

Most of us think of panfishing as a spring ritual. We fish for them maybe two months out of the year when they're bedding, or when we think they're bedding. We ended up that day with 61 fish and our trip took place in early August, which is not exactly traditional panfish season. The Pearl River basin is like that. Mark McElroy, a fisheries biologist with the Department of Wildlife and Fisheries, gave me an explanation:

"Around here, Panfish spawn when the water temperature hits 70 or so," he explains. "And muddy water isn't good for spawning. In April and May the Pearl River system is usually high and muddy, and this moving water is much cooler than other places in South Louisiana where panfish might start spawning in March. I'd say panfish probably spawn later in the Pearl because of those factors."

"Panfish also spawn more than once a year." Mark continues. "There is usually the major spawn in April or May, then another in July, and sometimes another in August or September. In the Pearl, you might find beds of spawning bluegill and barfish all though the summer and into the fall."

Our trip seemed to prove it. But even if these fish weren't bedding, they were certainly eating. We fished an area where dark outflow water met cloudier river water. In the Gulf, rips usually hold gamefish. In these fresh marshes I've found that these mini-rips hold panfish. I guess the basic principle is the same.

This little panfisherman tugs on a definite bite. His catch will later be part of the family fish fry.

Looking around on the way back to the launch I could only think of the Beverly Hillbillies. When they went fishing, it probably looked like this. No electronic gadgets in sight. Nothing shiny or metal flaked. Nary a computerized reel or sonar-activated screen. Just three kids and one semi-adult fishing from a boat, and our combined tackle might go at a garage sale for less money than one electric hook sharpener at a tackle show.

Not that there's anything wrong with technology — or sharp hooks. I'm in favor of both. But for today's fishing and tonight's fish fry, we had all we needed. Closed faced Zebcos, ragged little fiberglass rods, tiny styrofoam floats, panfish hooks, split-shot sinkers and horsepower in single digits. Most importantly, three enthusiastic youngsters were taking those first, all important steps toward a lifetime of fishing fun. ■

LAW LINES

Behind the Badge

BY CAPT. KEITH LACAZE

Some years ago, the early light of a cold and dreary January morning revealed wildlife agents and other rescuers desperately searching Catahoula Lake in central Louisiana. The objects of their search were three young men who failed to return from an afternoon duck hunt on the previous day.

By mid-morning they were experiencing both victory and tragedy. Two men were found cold but alive in their duck blind. The third hunter was not so fortunate. His body was recovered from a nearby blind. A victim of the elements, he had succumbed to the forces of nature during the long winter night.

The survivors' story was a sad one. They had arrived at the blind in time for the afternoon flight. In their haste to begin hunting, they had forgotten to tie the boat. The wind and waves pushed the boat from its stall and away from the blind. When he saw their boat drifting away, the young hunter jumped into the frigid, chest deep water and tried unsuccessfully to reach the boat.

Exhausted and wet, the hunter reached another blind and took shelter. His friends shouted to him continuously, overwrought with concern but unable to help. After a while, he no longer answered their shouts.

The sequence of events which resulted in that needless death are classic and all too common precursors of death from hypothermia. The definition of hypothermia is the condition of abnormally low body temperature. It is usually caused by exposure to extremely cold temperatures or immersion in cold water. The onset of hypothermia can occur very rapidly and the ability to recognize the symptoms is crucial. The condition is not always obvious and rarely are victims aware of the threat to their lives.

Although the indications and time factor vary a great deal depending upon the weather conditions and the individual, cold-water-immersion victims follow a fairly predictable pattern of symptom development. Shivering and rapid breathing are the first signs. The victim will also feel intense pain, and numbness in the arms and legs. This happens when the body drops below its normal temperature of about 98.6 degrees Fahrenheit.

As the body's core or inner temperature drops into the 95 degree Fahrenheit range, the victim becomes dazed and irrational. Speech becomes slurred and hearing is affected. Drowsiness also occurs. Once the core temperature drops below 90 degrees Fahrenheit, shivering ceases and the pupils dilate. If conscious, the person has no pain and may feel a sense of well-being.

By the time core temperature has dropped to 85 degrees Fahrenheit, death is near. But chances of survival are good and resuscitation must certainly be attempted.

Gradual warming and transport to a medical facility are the immediate steps in first aid treatment of a hypothermia victim. Cardiopulmonary resuscitation (C.P.R.) may be necessary if the person becomes unconscious and stops breathing. Avoid further heat loss by removing wet clothing and cover with blankets or coats. Do not heat the victim rapidly and do not give anything to drink. Rapid warming may cause the movement of extremely cold blood from the extremities to the inner core, further reducing body temperature. The consumption of alcohol will cause slowing of the metabolism, worsening conditions.

Proper clothing is the best protection against hypothermia. Fabrics such as wool and Gore-Tex provide insulation even when wet. Wearing a hat not only protects the head, it also greatly reduces heat loss. Wear a personal flotation device (PFD) on the water at all times. Vital energy and body heat are rapidly lost when swimming in cold water. A PFD will keep you afloat and prevent the increased cooling rate caused by treading water.

Hypothermia is a threat to all outdoorsmen. It need not always result in death if quick action and proper treatment take place. A case in point was demonstrated on Anacoco Lake a few years ago.

A local wildlife agent was telephoned by a woman whose husband had not returned from checking fishing lines. Temperatures were well below freezing and the lake was icing up as the afternoon waned. The shallows around the boat ramps were frozen, preventing the officer from launching his patrol boat. He was offered assistance by a lake side resident, whose own boat was moored in deeper water at a pier.

The officer and the volunteer rescuer motored out on the lake and soon found the missing husband. He had capsized his boat and had been in the water nearly an hour. Symptoms of hypothermia were obvious to the agent who wrapped the man in his own insulated coveralls as they hurried to shore.

The victim was bundled into a waiting car and transported to a hospital. Following three days of medical treatment, the man returned home, grateful to be alive and able to fish another day. He survived due to the rescuers' quick actions, proper training and his own tenacity for life.

Hypothermia is just one of the dangers that confront outdoor enthusiasts. Use caution and common sense anytime you are afield, especially during the colder winter months. Those factors combined with careful planning and preparation will guarantee a lifetime of outdoor enjoyment.

LDWF file photo

In a hypothermic situation remember to stop, get warm and get dry.

Education Corner

A CLOSER LOOK

... the good the bad and the ugly.

By Lyle Soniat, Ph.D.
Louisiana Sea Grant College Program
Linda Wygoda
Sam Houston High School, Calcasieu Parish

Exotics are non-native species which are sometimes intentionally brought to a new habitat -- as in the case of the nutria, or to beautify ponds in the case of the water hyacinth. Most major agricultural crops originated as introduced species.

More often however, as in the case of fire ants which arrived in cargo shipments from South America following World War I, the introduction of exotics to a new habitat is unintentional. Once these species have arrived, they can have a profound effect upon the native populations. Many have high reproductive rates. In the absence of natural predators, exotics' populations increase quickly. They may also compete with native populations, even causing the decline of some native species.

The Good and the Bad

At best, some exotic species are a mixed blessing. Nutria is an exotic species that make both good and bad impacts on the ecosystem. The nutria is a valuable fur-producing animal and it controls aquatic weeds which clog lakes and streams. But nutria are also blamed for damaging levees, eliminating marsh plants and thereby contributing to coastal erosion, damaging sugar cane and rice crops and displacing muskrat populations. Nutria populations, like those of many introduced species, had eventually stabilized as a result of natural predators, competition, and human control measures. This balance of good and bad impacts has been upset, however, by recent declines in the market for nutria pelts. The decrease in trapping and the resultant increased nutria populations have caused a rise in crop damage and deterioration of marsh habitat.

The water hyacinth is another introduced species, however, any benefit that it provides is outweighed by the problems it causes. A visitor to a New Orleans exhibition in the 1880s returned home with a sample of water hyacinth for the backyard pond. Ten years later this colorful plant, native to Central and South America, was thriving on the nutrient-rich waters of the southeast United States. The hyacinth is able to double its population every two weeks and unchecked by natural predators, it rapidly displaced native aquatic plants and clogged streams, canals and rivers.

Although the water hyacinth does filter out some impurities in water, considering the threat it causes to the ecological stability and our accessibility to waters-it must be considered harmful. Millions of dollars have been spent controlling this fast reproducing species. These are dollars that might have been better spent on other conservation measures. But without controlling plants like the water hyacinth, this alien species would shortly overrun our native species. Some scientists consider this type of biological pollution to be the most serious problem facing aquatic environmental managers.

Honeybees represent a case of two introduced species, one which has adapted to like North America and another which is now threatening that adaptation. European honeybees were introduced to North America with the first colonists. They became important in the pollination of numerous crops, many of which were also introduced at the same time. The accidental release of African honeybees in Brazil, and their subsequent spread northward threatens the existence of domestic honey produc-

> ***In the absence of natural predators, exotics, populations increase quickly. They may also compete with native populations, even causing the decline of some native species.***

tion. About one-third of the American diet is affected by honeybees either directly through honey or honey products or indirectly as a result of crop pollination. When the African honeybees breed with European honeybees, Africanized honeybees result. Since these are less aggressive than the pure strains of African bees, interbreeding with domestic bees is scientists' hope to control this exotic species.

The Ugly

The cost and benefits of some exotic species can be debated. However some species such as fire ants and zebra mussels are of dubious value. Fire ants, with a point of origin near Mobile, AL. have greatly expanded their range throughout the South. The fire ants' success can be attributed to a variety of factors that are characteristic of exotic species including aggressive behavior, ability to adapt to new habitats, and productions of huge numbers of offspring. Fire ants are responsible for the elimination of native ants, especially harvester ants, a prime food source for a variety of other species including the Texas horned toad. (The horned toad is actually a lizard which is now endangered throughout most of its former range, Its demise can be linked to the elimination of its favorite food: harvester ants.) Fire ants are also responsible for untold millions of dollars in crop damage, as well as injuries and deaths to humans, pets, and livestock.

Zebra mussels and fire ants succeed by their ability to overcome native populations coupled with their high rate of reproduction.

Zebra mussels, native to the Black, Caspian and Aral Sea basins, are among the most recent exotic species to invade Louisiana. They were first identified in the United States in Lake St. Clair in 1988, and have now spread throughout the Great Lakes, the Illinois, Ohio, Mississippi and St. Lawrence rivers. Zebras mussels are responsible for an estimated $5 billion dollars in damages to the Great Lakes region alone. Damage from these freshwater mussels is ecological as well as industrial.

Zebra mussels and fire ants succeed by their ability to overcome native populations with their high rate of reproduction. In the absence of natural predators, intervention by man in controlling these populations is essential.

Conclusion

Exotic species where intentionally or accidentally introduced to a new habitat, can have profound effects on the environment. Many exotics have high rates of reproduction and are able to adapt to a variety of habitats. These features combined with an aggressive or competitive nature enables exotics overcome native wildlife species. With a lack of competition and few natural predators, human intervention is required in order to control their populations and to prevent further ecological damage.

Activity

Consider the following hypothetical scenario and decide what you should do.

You are in the military and stationed on a large island in the Pacific. While assigned there, you take advantage of the wonderful bird hunting, especially a small and fast colorful flyer the local people call the "painted paloma."

The paloma is just a bit larger than the mourning dove and flies just as erratically. Not only are the plentiful birds good to eat, the black, white and red feathers are very distinctive. You think, "
These would be great to hunt back home. " Soon your tour of duty will end and you'd like to ship several pairs of the painted paloma home to start a colony there.

You have observed that the bird feeds on several types of grain and tastes delicious. What facts should you determine about the life requirements of this bird? Since its habits are similar to the mourning and the white-winged dove, what impact might it have on those species? What controls the paloma's population in the Pacific? What diseases does it have? Is it likely to survive with its distinctive plumage in our habitat?

What else do you need to know about the painted paloma to determine if this is a good or bad idea?

CONSERVATION notes

1994-95 Duck Stamp Art Chosen

The work of Louisiana artist Don Edwards will be featured on the 1994-95 Louisiana Duck Stamp. Edwards' painting of Mottled Ducks flying on autumn marsh landscape was chosen the best of the 22 selections submitted for the Duck Stamp art contest. His selection was announced on Wednesday, November 3, 1993.

Edwards, a resident of Keithville in Caddo Parish, has won numerous awards and recognition for his outdoor art. He has won the Artist of the Year at the Cajun Hunter's Festival (1984 and 1985), Artist of the Year from the Waterfowl Carriers and Collectors Guild of New Orleans (1982), and Artist of the Year from Ducks Unlimited of Louisiana (1987). He has also twice been named Artist of the Year by the Louisiana Wild Turkey Federation (1981 and 1990).

The 1994-95 stamp featuring Edwards' painting will go on sale May 1, 1994.

Waterfowl Mounts Donated for Training Classes

Wildlife agents attending the Department's waterfowl enforcement course now have a much easier time learning to identify ducks thanks to Steve German, a taxidermist from Westlake, Louisiana.

The professional taxidermist and winner of the National Taxidermists Association's Award of Excellence has donated a total of 14 specimen type waterfowl mounts to the Division of Law Enforcement. The mounts are used to teach waterfowl identification. Included in the collection are both male and female specimens of the various ducks typical to the Mississippi Flyway.

Saline WMA Re-named in Honor of Dewey Wills

A plaque and sign, re-naming Saline Wildlife Management Area in remembrance of Dewey W. Wills, was unveiled November 6, 1993.

The Department of Wildlife and Fisheries' Dewey W. "Jakie" Wills Wildlife Management Area occupies 60,276 acres in LaSalle and Catahoula parishes. Wills himself was district supervisor in this region and was instrumental in finalizing the purchase of this acreage. Saline, the department's second WMA purchase, was bought in 1964.

Wills dedicated his life to Louisiana wildlife management. He served with LDWF's Game Division for 27 years. He is credited with developing the department's land acquisition program, increasing department-owned acreage from zero acres in the late 1950s to more the 300,000 acres when he retired in 1982. During his last eight years with the department, Wills served as assistant administrator of the Game Division. His keen turkey hunting skills earned his the nickname "Jakie", a reference to the young male turkey or jake.

Wills died of cancer in March 1993.

Rocket-Net Boxes Donated by Transco

Transcontinental Gas Pipeline Co. (Transco) Station #54 in Washington, Louisiana donated three rocket-net boxes used in the Wood Duck banding program to the department. Transco provided materials and constructed the boxes for a donation value of $1000. These boxes provide a new method of setting up rocket-net sites where a traditional "flat set" of the net is not feasible due to terrain. Nets in these boxes are used when open space is limited by trees and other vegetations, common in Wood Duck habitat. These boxes have been used extensively during the recent banding season with over 1,500 Wood Ducks captured.

Charles Bosch Waterfowl Scholarship Established

An endowed scholarship for graduate research in the field of wildlife management has been established in the School of Forestry, Wildlife and Fisheries of the LSU Agricultural Center to honor of the late Charles W. Bosch Jr., who was executive secretary of the Louisiana Wildlife Federation for more than 20 years.

Formally known as The Charles W. Bosch Jr. Louisiana Wildlife Federation Waterfowl Scholarship, it was established through the LSU Foundation and will be administered by the LSU Agricultural Center under the direction of the director of the School of Forestry, Wildlife and Fisheries.

As executive director of the Wildlife Federation, Bosch worked to promote the welfare of sportsmen, enhance the status of all wildlife and actively protect the environment. He had a special interest in waterfowl, hence the scholarship supporting a student conducting waterfowl research in Louisiana.

The endowed principal is $100,000 wit interest from that sum used to fund the scholarship. Additional gifts or contributions to the fund will be added to the endowed principal.

The recipient of the scholarship will be chosen from students who have made formal application for admission to the LSU graduate program in wildlife. Selection of the recipient will be made by majority vote of the school's wildlife faculty. Appointment to the Bosch Scholarship shall be on a 12-month basis for a maximum of two years. The recipient will be expected to publish research resulting from scholarship study in recognized scientific literature and popular wildlife publications.

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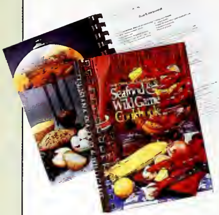

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Bayou Kitchen

by Wayne Miller

Photo by Ken Glaser

Trout Amadine

1/3 cup blanched sliced almonds
1 1/2 pounds fresh or frozen trout fillets or steaks
1/2 cup unbleached flour
1/2 teaspoon salt
1/4 teaspoon white pepper
2 tablespoons cooking oil
2 tablespoons butter
6 lemon wedges

Spread almonds in a single layer on cookie sheet and toast in preheated 400 degree oven until they turn deeply golden, about 4 minutes.

Prepare trout: rinse fish under cold water. Pat dry. Mix flour, salt and pepper together in paper bag. Lightly flour by shaking fillets in the bag.

Next, heat butter and oil in large skillet over medium-high heat. When mixture is very hot, quickly saute the fish 6 to 12 minutes per inch of thickness until the fillets are opaque throughout.

Place the fish on heated platter and distribute the toasted almonds over the Trout. Garnish with lemon wedges. Serves 4.

Broiled Marinated Snapper

1 1/2 pounds fresh snapper steaks
1/4 cup wine vinegar
1/2 cup light olive oil
1 medium onion finely minced
2 tablespoons parsley finely minced
2 cloves of garlic finely minced

Rinse steaks under cold running water. Pat dry. Combine remaining ingredients thoroughly. Place fish in shallow glass dish. Pour marinade over snapper. Allow to marinate in refrigerator at least an hour, turning once. Preheat broiler pan. Broil fish 4 to 5 inches from heat source 6 to 12 minutes per inch of thickness until fish is just opaque throughout. Serve immediately. Serves 4.

Barbecued Drum on a Bun

4 fresh fish fillets or steaks
1 tablespoon olive oil
1 bottle commercially prepared barbecue sauce
4 buns of choice
4 lettuce leaves

Rinse fillets under cold water. Pat dry. Brush lightly with olive oil. Grill fillets skin side up over hot coals about 2 minutes. Turn and brush fillets with generous coating of barbecue sauce. Grill 2 to 3 minutes longer depending on thickness of the fish. Grill buns lightly to warm. Place grilled fish on top of lettuce in each bun. Offer additional sauce on side. Serves 4.